

REMARKS**Summary of the Office Action**

Claims 1-7 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-9 of U.S. Patent Application No. 10/026,928.

Claim 6 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

Claims 1-7 stand rejected under 35 U.S.C. § 103 as being unpatentable over Howard (U.S. Patent No. 5,589,714) in view of Thomas (U.S. Patent No. 5,828,126) or Lin et al. (U.S. Patent No. 5,468,999) or Nishiyama (U.S. Patent No. 6,324,067).

Claims 1-7 stand rejected under 35 U.S.C. § 103 as being unpatentable over Hsiao et al. (U.S. Patent No. 5,292,688) in view of Thomas or Lin et al. or Nishiyama.

Summary of the Response to the Office Action

Applicants have canceled claims 6 and 7 without prejudice or disclaimer.

Applicants have amended claim 1.

Claims 1-5 are pending.

All Claims Define Allowable Subject Matter

Claim 6 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Applicants have canceled claim 6 without prejudice or disclaimer, rendering the rejection under 35 U.S.C. § 112 moot. Applicants thank the Examiner for the helpful suggestion, which has been incorporated into amended claim 1.

Claims 1-7 stand rejected under 35 U.S.C. § 103 as being unpatentable over Hsiao et al. in view of Thomas or Lin et al. or Nishiyama. Applicants have canceled claims 6 and 7 without prejudice or disclaimer, rendering the rejection of claims 6 and 7 moot. Applicants have amended claim 1. To the extent the Examiner considers the rejection under 35 U.S.C. § 103 to apply to newly amended claim 1, the rejection is respectfully traversed as being based on a combination of references that neither teaches nor suggests the novel and unobvious combination of features recited in amended claim 1. Claim 1 recites a combination of features including “an opening formed so as to penetrate said build-up layer” and “said electronic component is embedded in said opening by said embedding resin.”

The Office Action acknowledges that Hsiao et al. fails to teach or suggest the above-described features, and relies on Thomas or Lin et al. or Nishiyama for a showing of these features. However, it is respectfully submitted that the combination of Hsiao et al. with any of Thomas or Lin et al. or Nishiyama is improper at least because Hsiao et al. teaches away from “an opening formed so as to penetrate said build-up layer” and “said electronic component is embedded in said opening by said embedding resin.”

At col. 2, ll. 44-48, Hsiao et al. states that prior art techniques have been successful for the attachment of a semiconductor device to a rigid ceramic substrate by employing C4 (controlled collapse chip connection) techniques, but that the attachment of a semiconductor device to an organic substrate employing a C4 type connection is not suggested in the prior art. At col. 2, line 67 - col. 3, line 4, Hsiao et al. states that it would be desirable to be able to directly bond semiconductor chips to an organic substrate such as a printed circuit board by employing solder bumps, while achieving good C4 fatigue life properties.

Thus the invention of Hsiao et al. appears to be concerned with providing C4 solder connections of an integrated semiconductor device on an organic substrate. (See col. 3, ll. 25-27 of Hsiao et al.) At col. 3, ll. 46-53, Hsiao et al. states “[i]n particular, the present invention is concerned with solder interconnection for forming connections between an integrated semiconductor device and an organic substrate. The solder interconnection includes a plurality of solder connections that extend from the organic substrate to electrodes on the semiconductor device to form a gap between the carrier substrate and the semiconductor device.”

Thus, it is respectfully submitted that Hsiao et al. teaches away from “an opening formed so as to penetrate said build-up layer” and “said electronic component is embedded in said opening by said embedding resin.”

“[A] reference may be said to teach away when a person of ordinary skill, upon examining the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.” In re Gurley, 27 F.3d 551, 553, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994). See also MPEP section 2145(X)(D)(1).

Claims 1-7 stand rejected under 35 U.S.C. § 103 as being unpatentable over Howard in view of Thomas or Lin et al. or Nishiyama. Applicants have canceled claims 6 and 7 without prejudice or disclaimer, rendering the rejection of claims 6 and 7 moot. Applicants have amended claim 1. To the extent the Examiner considers the rejection under 35 U.S.C. § 103 to apply to newly amended claim 1, the rejection is respectfully traversed as being based on a combination of references that neither teaches nor suggests the novel and unobvious combination of features recited in amended claim 1. Claim 1 recites a combination of features including “a

substrate in which a build-up layer is formed by laminating an insulating layer and a wiring layer in alternate fashion” and “an opening formed so as to penetrate said build-up layer.”

As acknowledged by the Office Action, Howard does not show anywhere a substrate in which a build-up layer is formed by laminating an insulating layer and a wiring layer in alternate fashion, and an opening formed so as to penetrate said build-up layer. Moreover, Applicants submit that neither Thomas nor Lin et al. nor Nishiyama make up for the deficiencies of Howard because there is no motivation to combine either Thomas, Lin et al. or Nishiyama with Howard. Applicants respectfully submit that the only motivation to combine the resin of Howard with the any of Thomas or Lin et al. or Nishiyama is found exclusively in Applicants’ own application. MPEP § 2141 instructs that “the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention.” MPEP § 2143 instructs that “the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant’s disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ 1438 (Fed. Cir. 1991).” The Federal Circuit has clearly held that “the motivation to combine references cannot come from the invention itself.” Heidelberger Druckmaschinen AG v. Hantscho Commercial Products, Inc., 21 F.3d 1068, 30 USPQ 2d 1377 (Fed. Cir. 1993). Further, MPEP § 2143.01 instructs that “[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.” The MPEP § 2143.01 further instructs that “[a]lthough a prior art device ‘may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so.’” [See also In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed Cir. 1990).]

Claims 2-5 ultimately depend from claim 1, and recite the same combination of allowable features recited in claim 1, as well as additional features that further distinguish over the applied art. For at least the above described reasons, Applicants request that the rejections under 35 U.S.C. § 103, of claim 1, and claims 2-5 dependent therefrom, be withdrawn.

Claims 1-7 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-9 of U.S. Patent Application No. 10/026,928 (now U.S. Patent No. 6,586,827). The obviousness-type double patenting is respectfully traversed. The Office Action asserts that claims 1-7, while not identical to claims 1-9 of Application No. 10/026,928, are structurally and materially the same as claims 1-9 Application No. 10/026,928. Applicants respectfully submit that claims 1-7 of the instant application are not structurally and materially the same as claims 1-9 Application No. 10/026,928, and are patentably distinct from claims 1-9 of Application No. 10/026,928. For example, claims 1-9 of Application No. 10/026,928 recite “an embedding resin having a base color tone including carbon black in an amount not to exceed 1.4 mass %.” Accordingly, Applicants respectfully request that the rejection of claims 1-7 under the judicially created doctrine of obviousness-type double patenting be withdrawn.

Applicants respectfully submit that all pending claims are in condition for allowance.

CONCLUSION

Applicants respectfully request that this Amendment under 37 C.F.R. § 1.116 be entered by the Examiner, placing all pending claims in condition for allowance. Applicants submit that the claim amendments do not introduce new matter, since all of the elements and their relationships claimed were either earlier claimed or inherent in the claims as examined.

Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicant's undersigned representative to expedite the prosecution.

If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of time under 37 C.F.R. 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

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